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THE OBLIGATIONS OF THE STUDENT OF ANIMAL  
BEHAVIOR.

BY WILLIAM MORTON WHEELER.

IT IS well known that every common or conspicuous animal, like every eminent human personage, is destined sooner or later to become the nucleus of a myth-nimbus. An innate love of the marvellous stirs our fancy to invest all creatures with extraordinary powers, till we learn, with Lessing, that "it is the greatest of miracles that the real miracles can and must become such every day occurrences." This nimbus of myth is not entirely the work of the ignorant and child-like observer. The savant himself, from the days of Aristotle and Pliny down to the present era of abounding 'nature-books,' has contributed not a little to the hero-worship of animals.

In view of these conditions, the student of any science of animal behavior or comparative psychology worthy of the name, has a two-fold duty to perform. This is both destructive and constructive; destructive, in so far as he is compelled to submit traditions concerning animals to searching and depurative criticism; constructive, in so far as he is obliged to rebuild our knowledge of animal behavior on the securer foundations of careful observation and experiment. Destructive criticism, especially of the thorough-going kind which seems to be provoked by the now fashionable methods of studying animal behavior, is not a very agreeable undertaking. The scientific critic, if he is noticed at all, will be described as 'technical,' 'dry-as-dust,' and 'colorless' by those who are incapable of appreciating the beauty and interest attaching to the simplest of Nature's activities, but feel compelled to create wonders, like the child who lies for the sake of producing an impression on the too stolid adults of his environment. A moment's reflection, however, will show that until all that has been claimed for the behavior of animals has been tried as by fire, till it has been passed through the hot alembic of scientific criticism and the metal of truth has been separated from the slag of fiction, it shall form no part of enduring knowledge.

Not less laborious than the destructive are the constructive

efforts of the comparative psychologist, involving as they necessarily must, the endless drudgery of observation and experiment to establish the simplest facts. The kind of training required in such work is not necessarily given by any term of years spent in camping in the American forests, nor in the arrogant conviction of surpassing one's fellow men in keenness of insight into the animal mind. No such conviction necessarily carries with it a grain of authority. There is no short-cut to a knowledge of animal behavior in the sense of a trajectory which o'er-leaps a humble and diligent apprenticeship in the methods of correct observation and reflection. In no science is it more true than in comparative psychology that "every man shall not go to Corinth."

There are a few simple considerations which the objective student of animal behavior must constantly bear in mind. A moment's reflection shows that all we can really perceive of animal behavior is certain movements of the creatures in time and space. As soon as we attempt to assign causes to these movements we at once pass into the province of pure inference. This, of course, holds good also of human actions, but in this case we are at least dealing with organisms essentially like ourselves in structure and development. All animals, however, differ more or less widely from man. They have neither the power of concealing nor of revealing their mental processes by means of speech, and, although their actions are, in a sense, frank and undisguised, and often resemble human actions which we have learned to associate with certain feelings, volitions and thoughts, we can never do more than infer a similar association in animals, since we are forever debarred from knowing what is actually taking place in the animal mind. It follows, therefore, that we can have no such thing as an animal psychology or science of animal behavior, unless we accept these inferences from analogy as a valid scientific method. Thus the science resolves itself into a critical treatment and testing of these inferences. And it is just here that the tendencies of the true and the false students of animal behavior diverge. The latter, consciously or unconsciously, construe the predicament of our inability to know what is going on in the animal mind, into a license for all kinds of fancies and a safeguard for unremitting malobservation.

The conscientious student, however, is not without a means of circumventing, so to speak, all these tactics of the pseudopsychologist. He can apply another principle within easy reach, namely "Occam's razor": "Complicated explanations are inadmissible when simpler ones will suffice." We are not, for example, to accept human reasoning as an explanation of any animal behavior, till simpler processes, like instinct and associative memory, have been tried and found wanting. At the present time all cool-headed students are unanimous in the opinion that animals show no evidences of being able to form abstract concepts, much less to construct judgments and draw conclusions from them after the manner of reasoning human beings. In so far as they are not instinctive those animal actions which are commonly attributed to reason may be completely or almost completely explained as the result of associative memory (association of ideas), or at most as an exercise of what has been called the "practical judgment." All of these processes, however, are much simpler than human ratiocination.<sup>1</sup>

The fact that in man the reasoning powers are the latest to develop and, in cases of mental disease, the first to disintegrate, leaving nearly intact the emotional and volitional processes, indicates that the reason has been a late acquisition during the history of animal life. It may well be peculiarly human. And while it is

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<sup>1</sup> Interesting treatment of this and many other subjects relating to animal behavior will be found in the following important works: C. Lloyd Morgan's 'Habit and Instinct' and 'Comparative Psychology'; W. Wundt's 'Lectures on the Human and Animal Mind'; L. T. Hobhouse's 'Mind in Evolution'; A. Forel's 'Psychic Powers of Ants, etc.' (translated in 'The Monist', 1903-1904); J. Loeb's 'Physiology of the Brain'; H. Driesch's 'Die Seele als elementarer Naturfaktor' (not yet translated); E. Wasmann's 'Instinct and Intelligence.' The works of Morgan, Wundt, Hobhouse and Forel deserve the first rank on account of their sanity and philosophical breadth of view. Loeb's work is remarkable on account of its original and destructive criticism. Driesch's work is noteworthy for its highly, not to say ultra-, objective method. Wasmann's work abounds in keen and instructive criticism of the humanizing school of animal psychologists. He is an advocate of the mediæval psychology of the church. Although his persistent efforts to crush the facts of modern psychology into the Procrustean bed of scholastic definition and terminology will certainly not meet with general approval, his above mentioned work as well as his numerous papers on the behavior of ants, etc., contain many valuable observations.

assuredly a matter of importance to determine whether rudiments of reason exist among animals, and to study this wonderful power in its incipient stages, it is equally true that the comparative psychologist may lay too much stress on the intellectualistic aspects of the animal mind. Of far greater importance is the study of those processes which lie at the very foundation of our own, as they do of the animal's mental constitution, namely, the feelings and the will, and their manifestations in instinct. Nor should it be forgotten that to reason is itself, in a sense, instinctive. It is probable, therefore, that the science of animal behavior will, in the future, lay less stress on the rationalistic side and more on the more profound and no less wonderful phenomena. To this great value of the study of instinct the philosopher Schelling bears witness when he says: "The phenomena of animal instinct are of the greatest importance to every thinking man — they are the true touch-stone of a genuine philosophy."

In view of the preceding statements, it is not surprising that the study of animal behavior has passed out of the anecdotal stage. This fact seems not to be realized by many of the authors of "nature-books" in this country. At the present time the animal anecdote is admissible only in works of art, like the fable, the animal epic or the animal idyll, or for the purposes of destructive criticism. In other words, its chief scientific use is negatively didactic, or for the purpose of illustrating how not to study and describe animal behavior.<sup>1</sup>

The constructive work of the student of animal behavior is not completed with the accumulation of knowledge in conformity with true criteria. He may be expected to present the truths thus acquired in clear and attractive form for the purpose of encouraging others to continue the great work in this limitless field of observation and experiment. Few authors have been able to do

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<sup>1</sup> Those who cannot repress a feeling of disappointment on learning that there is no evidence to show that animals can reason like themselves, may find consolation in the fact that the very naïveté of animals — their limitations and stupidity, humanly speaking — is a fact of great interest and beauty. Who will deny that the very absence of the reasoning and reflective powers enters very largely into our æsthetic appreciation of the actions of our domestic animals and of our own children?

this and avoid the pitfalls of malobservation on the one hand and those of poetic distortion on the other. Among the few may be mentioned Maurice Maeterlinck in his 'Life of the Bee' and Jules Fabre in the eight incomparable volumes of his 'Souvenirs Entomologiques.' Unfortunately only a single volume of the latter's work has been translated into English, and even the original is far too little known and appreciated. Those who are feeding the American public with false animal psychology done up in tinselled English interspersed with seductive half-tones, would do well to study the methods whereby the young Belgian mystic and the aged French observer contrive to satisfy the reader's æsthetic sense without departing from the truths of rigid observation and experiment. While it is not given to all to succeed like these, it is certainly possible for any one to repress a striving for æsthetic effect at the expense of truth.

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UNPUBLISHED LETTERS OF JOHN JAMES AUDUBON  
AND SPENCER F. BAIRD.

BY RUTHVEN DEANE.

THE following correspondence between John James Audubon, at the age of sixty-two years, and Spencer F. Baird, a young man of nineteen years, cannot fail to be of interest to the readers of 'The Auk.' The letters are of peculiar interest, as they touch upon Audubon's proposed trip to the Missouri River and of Baird's great desire to accompany him, and show the deep interest and affection each held for the other, though there was a difference of forty-three years in their ages.

The original letter from Baird has come into my possession through the generosity of Miss M. R. Audubon, and I am under great obligation to Miss Lucy H. Baird for a copy of the original Audubon letter and recommendation, which she found among her father's correspondence.